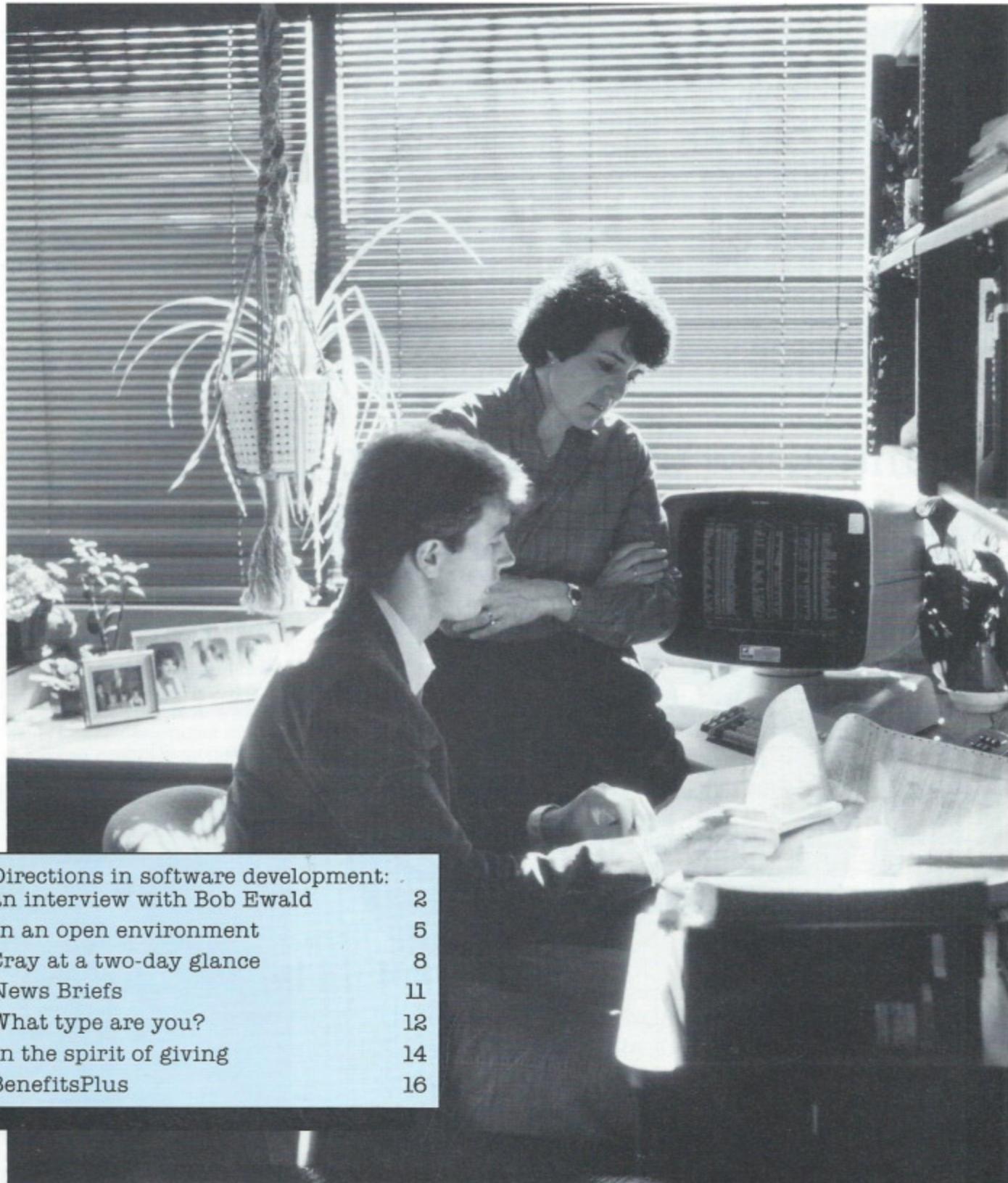


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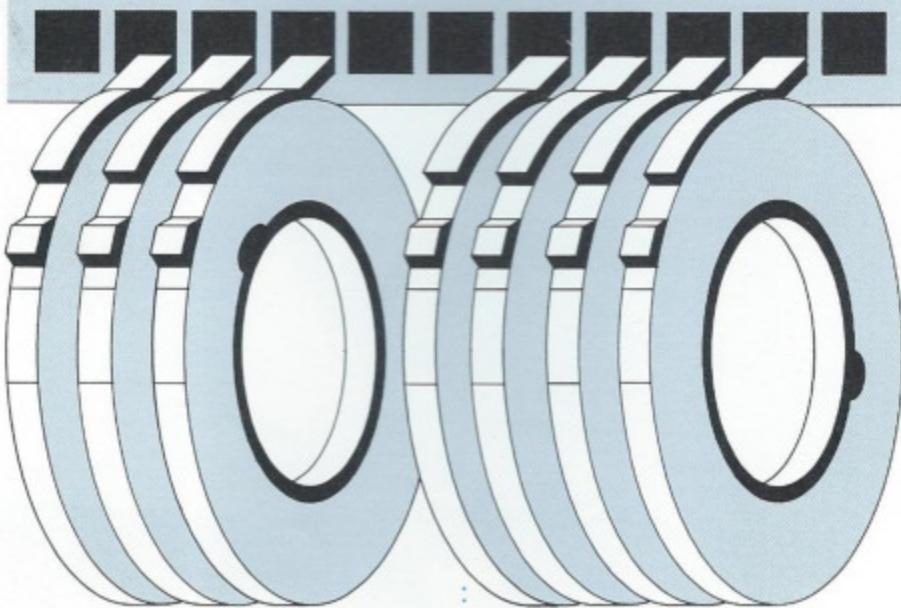


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Because of changing competition and a changing customer base, the people in software development are in a race to develop the fastest, best software in the areas in which Cray Research elects to compete. Above, Jeff Lane and Sharon Lammers, senior programmer analysts in Mendota Heights.

DIRECTIONS IN SOFTWARE DEVELOPMENT

an interview with Bob Ewald

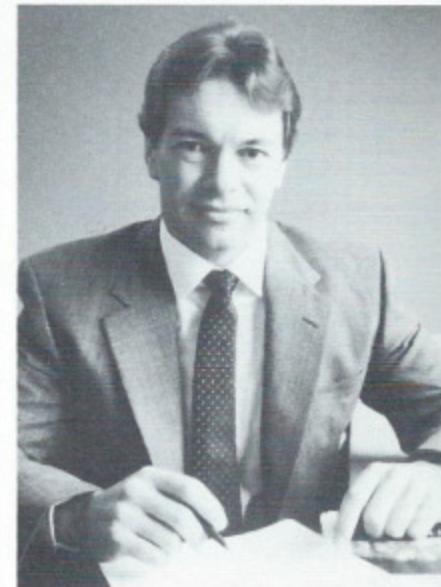


Last Fall, Bob Ewald became vice president of software development at Cray Research. Many people have expressed interest in Bob's unique perspective and his outlook on the challenges his group faces. Here are his thoughts, shared through an interview with *Interface* in November.

Interface: Under your direction, what elements of software development do you see being emphasized?

Bob: Overall, you will see us continue to push performance across all of the software that we provide. Cray Research is recognized as having the best-performing hardware anywhere in the world, and we want the same to be true of our software. Specifically, however, there are five major areas that you'll see emphasized within software.

First, reliability. Our software has to be reliable. Today, our customers use our computers as tools, and the tools have to be available day in and day out. We have to provide software so that our systems will run more than a month between failures! Our goal by the end of 1988 is to have both COS and UNICOS operating at about 1000 hours between failures, compared to 800 and 200 hours today.



Bob Ewald, vice president of software development.

Second, Fortran. There can only be one best Fortran compiler, and our Fortran compiler has to be it. I want our Fortran compiler to be the best at recognizing vector constructs, performing vector optimization, recognizing parallel constructs, mapping parallelism onto our hardware, and doing scalar optimization. In addition, we need to take a combination of tools that exist in Fortran and mold those tools together into a coherent environment, so it's easy for the user to go from one part of the Fortran environment to another. It's all part of building a strong Cray Fortran environment.

Third, we have to push ahead in parallel processing, across all of our software activities, not just with compilers. All of our software activities have to either *support* or *do* parallel processing so that we can get more performance from our machines.

Fourth, we're going to push the C environment. I think there will be increasing use of the C programming language in science and engineering. We're already starting to see it in the electronics industry and in work being done in universities. We see C in physics and in computational chemistry — applications that are key to our success. We have to make a very high-performance C compiler, such that the user could take an algorithm and either code in Fortran or code in C on a Cray and receive about the same performance. Our goal by the end of 1988 is to have our C compiler produce executable code that has about the same performance as our Fortran compiler.

The last of the five major emphases is networking. One of the ways that Cray Research differs from the competition is that we really help our customers by allowing Cray systems to be connected to everything from Apple to VAX to IBM machines. The point is that we have to continue to push ahead on the networking front, and that means implementing standard sets of protocols, moving

Reliability

COS and UNICOS — 1,000 hours between failures

Fortran

Performance leader

- Recognizing vector and parallel constructs
- Performing scalar, vector, and parallel optimization

Integrated environment

Parallel Processing

Leading implementation

C Environment

Performance comparable to Fortran

Networking

Higher speed networks
Standard protocols
Broad connectivity

to higher-speed networks, and then ultimately, finding ways to allow applications to be distributed around the network. I would expect that in the next few years, we'll see users demanding that part of their application run on a workstation in their office, part of it run on a Cray system, and part of it run on an IBM machine or someplace else in the network. Ultimately, we will have to be able to support that.

I: Can you talk more specifically about plans for COS and UNICOS?

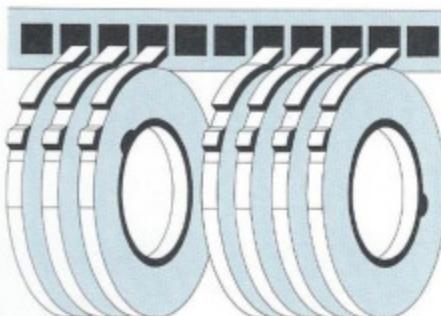
B: We need to stabilize the existing UNICOS operating system and put additional features and functionality into it so that it surpasses what we've had in COS. We want to make UNICOS a good vehicle for people to migrate to — one that has features beyond COS and supports interactivity well. There are many applications in the UNIX world that will be able to run on UNICOS, things that you typically wouldn't think of as Cray applications, but nonetheless, could migrate onto a Cray system easily. More important, we have to make it simple for the typical scientist to run UNICOS. Basically what we want to do with UNICOS is make it a good, stable operating system that is easy to use by scientists and engineers. I think we can do that.

I: What do you see as software's biggest short-term challenge?

B: Today's biggest challenge is the issue of stability. Some people say you can't develop high-performance functional software that also has stability, but I don't buy that. There are some trade-offs, but it's not one or the other — it's maybe a 10 percent trade-off.

I: What about in the long term?

B: In the long term, the biggest challenge for Cray Research lies in the application of parallel processing. We really are just



getting started in this area, and we don't know yet what the best tools and techniques will be for parallel processing. We still have a lot of R&D work ahead of us.

I: How do you see the work environment changing in software?

B: Basically, what I'm looking to do is to build upon the strengths we have as a company — a good set of hardware, networking, and software tools, individual creativity and talent, and a challenging work environment.

More specifically, I want to see us work and communicate better with people in different divisions. We will have to continue to set directions for our projects. Our software is developed by individuals and teams, and we all need to work toward the same goal. And because we're supporting so much software in so many places, I think we have to pay attention to the methodology or the discipline that we use to develop our software. We need to ask people to do more planning up front and to try to get issues resolved before we actually start writing lots of code. We're also going to look at the tools we use. Right now, for example, we use a number of different source control systems. Somebody working on UNICOS may use a particular editor to enter text, and another person may use a different one. And when we try to pull all of that source code together to build a new operating system, we add more complexity to the task because our

tools are different. So, we'll try to use better tools and then also try to extend the use of those tools to people in technical support and out in the field.

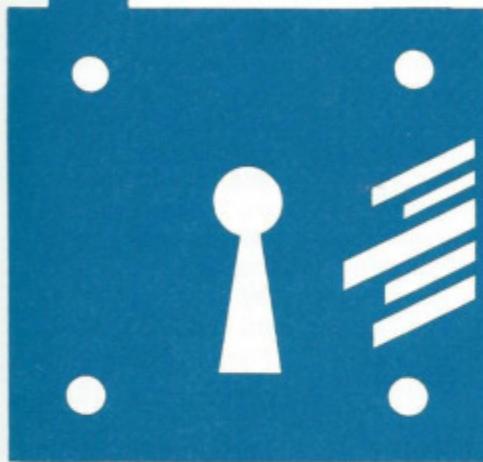
I: How do you think the outside world perceives the current and planned changes in software at Cray Research?

B: The people I have spoken with are pretty positive. They're looking forward to some good things happening with this change, and at the same time, are expecting a lot from us. They're looking for high-performance, functional, and reliable software. They want to be able to build into their plans when they can expect to get software features from us, how well the software will perform, what it is going to look and work like, and when it will be finished and delivered.

I: Where do you feel these changes will take Cray Research?

B: I think we're at a stage where people are ready for a change in software. People recognize that things are going to be done differently in this area, and that more and different sets of people will have a bigger chance to influence the direction that software efforts are taking. Generally, morale is pretty strong, and I've been very impressed and encouraged by the response I've received since arriving here. At the same time, I see that because of changing competition, a changing customer base, and changing applications, we are in a race. We are in a race to develop the fastest, best software in the world in the areas in which we elect to compete. We have a good idea of what those areas are, so we need to get on with our development. And as a result, we will generate some real excitement within Mendota Heights. I want our customers, at the time they walk out of Mendota Heights, to feel as much excitement as they do when they walk out of Chippewa Falls. The race is on. •

In an open environment



Emerson Ployee, an accountant for Acme company, is walking home from work when it starts to rain. He pulls a folder from his briefcase to use as an umbrella. Once home, he leaves the wet folder in the hallway to dry.

A little later, Emerson's four-year-old daughter finds the drying folder filled with colorful charts and pictures and takes it outside to show her friends. When Emerson finally looks for the materials and discovers that Suzy has been playing business executive, it's too late. His work is strewn throughout the neighborhood.

Certain he can find another copy at work tomorrow, Emerson picks up those papers he sees. Unfortunately, what he fails to realize is that the missing pages outline information concerning Acme's current operations strategy — valuable information that the competition would love to have and could definitely use to its advantage.

Is this scenario a little far-fetched? Maybe. But protecting information is no fairy tale.

One of the most recognizable hallmarks of Cray Research is its open and trusting environment. Employees at Cray Research exchange information frequently — often information that is sensitive or unavailable to the public. It therefore becomes the responsibility of every employee at Cray Research to handle information properly and with care.

Why do we protect information?

Sensitive information in the wrong place at the wrong time could be catastrophic for Cray Research. Undisclosed financial information in the hands of securities analysts could cause an untimely

rise or fall in the price of the company stock. Our prospect lists in a competitor's hands could provide that competitor with an unfair marketing advantage over Cray Research. And understandably, information on the company's research and development efforts is certain to be of great value to the competition as well.

Beyond these obvious misuses of information, however, employees of Cray Research also are obligated to protect sensitive information belonging to Cray customers and vendors.

For example, some customers of Cray Research consider owning a Cray system a distinct strategic advantage over their competition — an advantage they'd like to keep private. Other customers use Cray computers for top-secret projects in research and development. Because of these and other special situations, Cray Research employees are required to put as much effort into protecting information belonging to companies working with Cray Research as they do with the company's own information.

Recognizing that improper handling of certain information could impact the company's business was a first step. Deciding to re-examine how Cray Research protects sensitive information was the next. Early in 1986, Les Davis, executive vice president of development and manufacturing, and Dick Morris, vice president of technical operations, assigned a task force responsibility for developing a program for protection of information. The direction given to the task force was that the program had to meet the unique needs of employees of Cray Research — it had to be strict enough to protect sensitive information, but flexible enough to allow employees to do their jobs.

"Cray's Guidelines for Protecting Information were formed with employees in mind," says Janet Robidoux, manager of technical publications and leader of the task force. "The guidelines are consistent with the company's way of doing business because there isn't one



person in charge of protecting information — it's the equal responsibility of all employees to protect information to which they have access."

Public, private, or proprietary?

Correct labeling is the backbone of the guidelines because it dictates how employees should handle and distribute a piece of information. According to the guidelines, information can be classified into one of three categories: Public, Cray Private, or Cray Proprietary.

Unless formally labeled otherwise, information is assumed to be *Public*. Public information is not protected and is available to anyone upon request. It includes general-interest information about the company such as press releases, product brochures, quarterly and annual reports, applications software directories, *CRAY CHANNELS*, and most company newsletters.

Interface is classified as public because employees are encouraged

to share the publication with their families. However, employees should be aware that certain information in *Interface* could be considered sensitive. People should exercise discretion when distributing this publication to non-Cray employees.

The second category of information is *Cray Private*. Cray Private information is considered important to company business and should not be distributed outside the company unless the action is properly authorized. Information in this category includes company telephone directories, technical updates and newsletters, and drafts of user manuals for unannounced products.

The third and most sensitive category of information is *Cray Proprietary*. If improperly distributed outside of Cray Research, this information could seriously damage the company. Examples of proprietary information include hardware design documents, financial and strategic plans, customer prospect lists, and trade secrets. Correct handling of this information is key to Cray Research's success.

Handling sensitive information

Cray Research employees do not automatically have access to Cray Private and Cray Proprietary information. In keeping with the company's style of openness and trust, however, information is available when employees need it for their jobs. Along with this freedom comes responsibility, and it is important that people know and practice correct procedures for handling sensitive information at every level. Protecting information begins with correct labeling by the author and does not end until the information is disposed of properly by the recipient.

To help employees with this responsibility, the guidelines to protecting information have been included in the latest edition of the employee handbook. In addition, all managers have an informational supplement to these guidelines to help them answer employee questions.

Following are correct procedures to be practiced when sharing Cray Private and Cray Proprietary information with someone outside of Cray Research.

Cray Private: Non-Cray people may only receive Cray Private information at the discretion of the manager in charge of the information. David Frasch, Cray technology counsel, is to be notified anytime Cray Private information is given to people not working for the company. If technical information labeled as Cray Private is to be distributed outside the United States, the material must meet the Export Administration Regulation Guidelines for Restricted Technical Data (GRTD), and the recipient may have to sign a letter of assurance stating that the information will not be redistributed to unfriendly nations. Specific questions concerning export regulation should be directed to the company's government relations office in Washington, D.C.

Cray Proprietary: Permission to distribute Cray Proprietary information can be granted only by the vice president or director of the project or department responsible for the document. The recipient must sign an agreement stating that the information will not be shared with a third party. Distribution of proprietary information outside the country usually requires a Department of Commerce export license and also may require a Department of State export license. Again, any questions concerning the exportation of information should be directed to Cray Research's Washington, D.C. office.

Disposal

In all cases, when company information is no longer needed, it should be disposed of properly. Disposal, however, varies with the information and the situation. "It would be

ridiculous for us to have a policy to tell us how we should throw away our trash," comments Dave Frasch. "The employee has to make a decision on how the information should be destroyed. In some cases it is adequate to throw a document in the trash. In other cases, it is a good idea to incinerate or shred the document. It's really up to the holder of the information. The main objective is to make sure that the information doesn't fall into the wrong hands. Any means of disposal that prevents this is sufficient."

An ounce of prevention

Whatever media form information takes — a handbook, an electronic database, or a piece of microfiche — it should be labeled, protected, and

disposed of properly. In lawsuits concerning the theft of proprietary information, the courts take into account how well the information is controlled and protected. In most cases, the courts rule for the company that can prove it made a consistent and coordinated effort to identify and protect its information. At Cray Research, sensitive information is available to all Cray Research employees in an effort to supply them with the resources they need to do their jobs. But because information does flow freely within the company, all employees take responsibility for protecting the information they have in their possession. If everyone participates in this effort, Cray Research can prevent sensitive information from getting into the wrong hands. ●



Data privacy guidelines

At Cray Research, we take an employee's right to privacy seriously. The corporate guidelines for protection of information classifies personal employee information as Cray Private. Because of the extreme sensitivity of this information, however, a task force has developed special guidelines to define, more specifically, Cray Research's position on protecting private employee data. The formal set of guidelines will be completed and available from your local human resource representative in the first quarter of 1988. Below, however, are

examples of the types and availability of information protected by the Data Privacy Guidelines:

- **Personal employee data**, which includes employee birthdate, marital status, social security number, and medical information, is used to administer benefit plans and to meet company legal obligations. It is available to the individual employee and to the human resource staff responsible for the employee on a need-to-know basis only.
- **Job-related data** includes information on compensation and performance appraisals and is supplied by both the employee and his or her manager. It is information available at any time to the employee, the employee's manager, and a manager considering the employee for a new position. It

also is available to the human resources staff responsible for the employee, on a need-to-know basis.

- **General employee information** is information that is available to employees on a need-to-know basis. Examples include home addresses and telephone numbers, employee numbers, and job titles. The department responsible for maintaining the information restricts access as appropriate. The only employee data that will be released to the general public is the employee's work telephone number. However, employment status, hire date, and job title will be *verified* over the phone. Written approval from an employee is necessary for the release of additional information in this category.

In all of these cases, private employee data is maintained in a secure environment. For more information, please contact Lis Wierum at extension 6464 in Minneapolis.

Cray at a two-day glance

"Everything you always wanted to know about Cray, but never asked..." was the theme of this year's Support Staff Seminar. And by the looks of the agenda, the seminar definitely was packed with information. The seminar, which was held in October at the Holiday Inn Metrodome in Minneapolis, was attended by almost 200 people. "The Support Staff Seminar always provides an opportunity for people to network and exchange ideas," explains Mary McDiarmid, employee development specialist and facilitator of this task force, "but specific learning objectives vary from year to year. 1987's seminar offered discussions on Cray Research's business and tours of the company's facilities."

Discoveries for some and refreshers for others

To accommodate the number of attendees, the two-day Support

Staff Seminar was offered twice the week of October 19. Although the topics were identical, different specialists were scheduled to speak at each seminar. Bob Ewald, vice president of software, and Dallas Skaug, manager of guest services, introduced the seminar theme with a general overview of Cray Research and a look at the company's future. This discussion was followed by CRAY X-MP and CRAY-2 product updates given by Bob Kelly, marketing consultant, and Carl Diem, director of marketing support. "I'm a new employee of Cray Research," says Shirley Price, an office administrator in Cray Canada, "so the product update was especially interesting. For instance, now I understand the significance of the numbers following the system name. They represent the amount of memory and the number of central processing units in a system."

The voice of experience

by Colleen Pace, Minneapolis

Have you considered joining the task force for next year's Support Staff Seminar? It's a job I highly recommend. Let me tell you about my experience!



Colleen Pace

When I decided to serve on the task force for 1987's Support Staff Seminar, I had no idea what to expect — I had never been a member of any task force before. It sounded like fun, and as it turned out, I was right. It is fun — but it's a lot of work, too!

Because I am a member of Cray's support staff, it meant a lot to me to be able to plan a seminar for other support staff members. I attended my first support staff seminar in 1986 — as a participant. Suddenly, I was a task force member in charge of planning the next year's seminar, and it was my turn to participate from the other side of the fence — so to speak. I knew I should take everything I experienced last year into consideration and find ways to improve the seminar, because now I was one of the people responsible for making sure that this seminar would help other support staff people in their daily jobs!

Our first meeting was scheduled for early September. The task force consisted of 13 people* from all over the company, so there were

both familiar and unfamiliar faces. That unfamiliarity soon changed, however. Once we began planning, I got so caught up in the action — with everyone brainstorming and throwing ideas and comments back and forth — that I was comfortable in no time at all.

After getting down to business, we all decided that the seminar's emphasis should be Cray Research. "The support staff people need to know about the company they're working for," we thought. Eventually, we came up with the theme "Everything you always wanted to know about Cray, but never asked..."

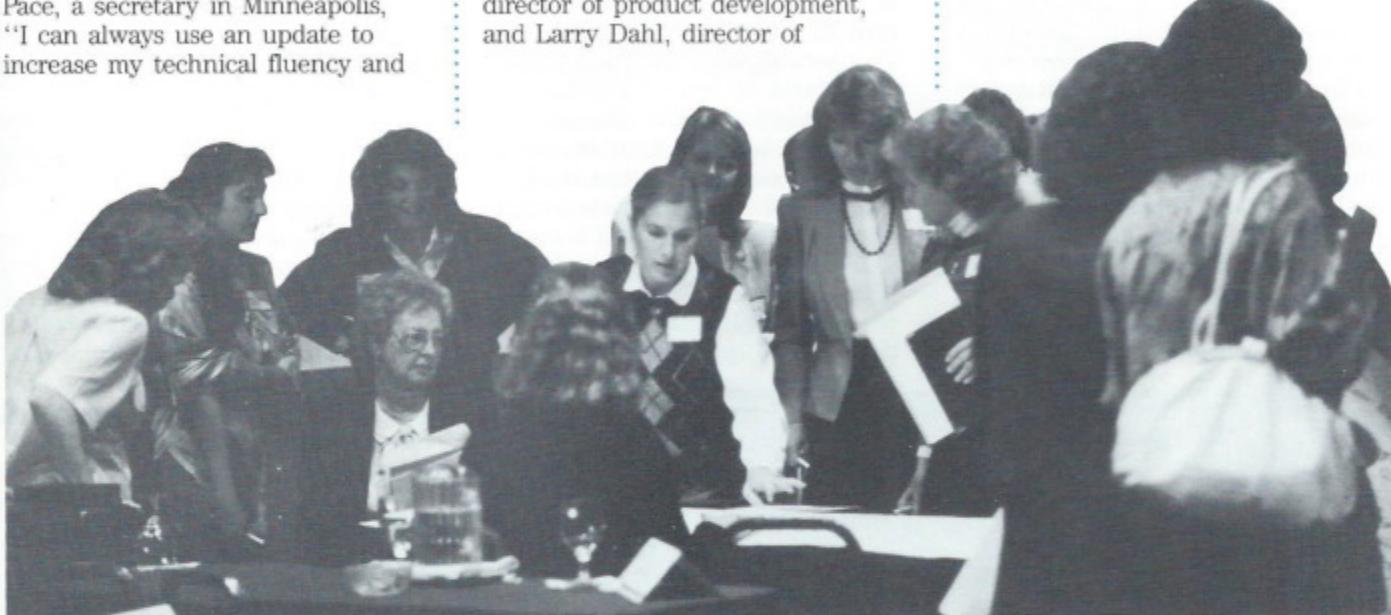
Once the theme was set, we were on our way. The next step was to choose the best way to get that theme across. Well, who knows more about Cray than people who work for Cray? We decided to ask people from within the company to speak at the seminar — people who could share their knowledge of Cray Research with the rest of us.

And for people who had been around the company for a while, these presentations offered a review. "Although the information presented was familiar," explains Colleen Pace, a secretary in Minneapolis, "I can always use an update to increase my technical fluency and

boost my confidence when I'm talking about the company."

After the overviews, several other aspects of the company's business were explored. Donna Whiting, director of product development, and Larry Dahl, director of

manufacturing, talked about the manufacturing process; and Suzy Tichenor, director of trade policy, and Bill Bartolone, legislative-federal



After choosing speakers, we set up a time table for the seminar. That was a difficult job with many different priorities. We wanted to keep things moving and not lose anyone's interest. We wanted the speakers to speak just long enough. We didn't want too many breaks, but we didn't want the day to get too busy. And we only had so much time to schedule! After a few discrepancies and a lot of rearranging, we finally had a set schedule.

The task force progressed well during our first two meetings. The more time we spent together, the more we got to know each other and the better we worked together. What better way to get to know a group of people than to throw them all together to exchange thoughts and ideas for an entire day? Needless to say, by the end of a task force session, everyone was pretty exhausted. You wouldn't think sitting in a room all day could be so tiring!

Each time we met, we were eager to get started — to share new ideas we had come up with since the last meeting, to discuss ways to improve the schedule, or to talk about new items to add to the display center. Sometimes that eagerness wore thin, however, when we spent too long on one area and took forever to come to a decision. You can only rehash something so many times before you get tired of hearing about it. And when working with a group, sometimes it's difficult to reach a conclusion that pleases everyone. Compromise is the key.

Once the seminar got started, I got to watch our plans turn to action. I really was pleased with the results. I felt a real sense of accomplishment, especially when people attending approached me with a positive comment about the seminar.

I think I speak for the entire task force when I say that we all felt a special camaraderie by the end of the seminar. It was difficult to say

goodbye and go our separate ways. We all talked about how we would love to come back next year and do it all again. However, each new year brings a new task force and a new opportunity for other support staff to get involved in the next seminar.

Well, have I convinced you? I hope so, because Cray Research needs great people to be on this task force. It's a terrific experience, but don't just take my word for it — talk to anyone who participated!

*1987 Support Staff Seminar Task Force Members included Lesa Anderson, Chippewa Falls; Trina Beard, Minneapolis; Mark Cobb, Washington, D.C.; June Erickson, Mendota Heights; Kenette Faulkner, Pleasanton; Carol Greier, Minneapolis; Beth Jakubowski, Detroit; Mary McDiarmid, Minneapolis; Reatha McGill, Minneapolis; Loni Meinen, Chippewa Falls; Colleen Pace, Minneapolis; Clark Travis, Mendota Heights, and Lucille Zenner, Chippewa Falls.

10.

program manager, discussed export licensing and government representation in Washington, D.C. A lot of people were especially interested in the latter discussion. Kathy Boehm, a receptionist in Rice Lake, says, "Although I think all the speakers did a great job, Suzy Tichenor was so fascinating, and her subject matter was so unfamiliar, that when she was finished and it was time to move on, people were still raising their hands to ask questions."

Account managers Rene' Copeland and Russ McKee talked about how to sell Cray supercomputers. "Selling a supercomputer takes a lot more time and persistence than I thought,"

tion to help people perform better at work, and information to get people to think about themselves in a new frame of reference. But hot seminars also provide time — time to breathe, time to network, and time to get to know other people. This second need was included in the agenda by way of a getting-acquainted icebreaker, two self-awareness sessions, Cray resource tables, meals, and a social hour.

At the morning icebreaker, each attendee received a list of ten questions relating to fellow attendees' jobs. "We had to figure out who's who, by matching the questions to the people," says Robin Smith, a

into how individuals with diverse personalities work together.

And the departments

The familiar phrase "the individual is key at Cray Research," says much for the company's success. However, success also can depend on how well people work together. "Finding out what other departments do and how we can support each other was invaluable," says Vicki Crawford, the contracts secretary in the Eastern region. To explain how their departments function and to provide suggestions on how they might support a variety of needs, the following people gave five-minute talks and remained available for questions during breaks: Jim Morgan, graphics; Zoe Merrell, copy center; Gary Schroeder, distribution and shipping; Reatha McGill, travel services; Gary Hines, training and development; and Carol Joswiak and Sheri Bierl, office automation. "What I learned from these people," notes Jim Epperson, a truck driver in Mendota Heights, "is that Cray Research employees can operate on a reciprocal basis — sort of like 'you scratch my back, I'll scratch yours, and together we'll get this computer out the door'."

The big picture

The seminar and facility tours left a variety of impressions with people, and of course, each attendee favored some segments over others. But Kathy Boehm sums up the task force's success in meeting the theme objective "Everything you always wanted to know about Cray, but never asked..." She says, "As a manufacturing employee, I think it's interesting to watch the systems being built. But through this seminar, I was able to see what an entire Cray system looks like, to learn what it takes to sell it, and then after it's finally sold, to understand the efforts involved in getting some of our systems out of the country. For me, the seminar provided a complete picture."



Sandra Jerome, Tampa sales office

comments Jeff Williams, a facilities clerk in Minneapolis. "A salesperson has to gain customer confidence, show how the Cray product meets someone's needs, court the potential customer for sometimes as long as 18 months, and then, after the system is acquired, continue to keep the customer satisfied."

The individuals

Hot seminars contain information — information to take home, informa-

support person from the Atlanta sales office. "It's a great way to remember not only faces and names, but what people do at Cray Research."

In addition, people could choose to spend the afternoon in one of two self-awareness sessions: the Myers-Briggs Type Indicator (see related article in this issue) or Self-Empowerment. These sessions were designed not only to help indicate and understand individual personality traits, but also to gain insight

News Briefs

New customer orders CRAY X-MP

On October 21, Cray Research announced that General Electric (GE), acting as prime contractor for the Department of Energy, ordered a CRAY X-MP/48 computer with SSD solid-state storage device, valued at approximately \$17 million. The purchased system will be

installed in the fourth quarter of 1987 at the Knolls Atomic Power Laboratory in Schenectady, New York, which is operated by GE for the Department of Energy.

First Japanese government order

On October 26, Cray Research announced that the Ministry of International Trade and Industry ordered a CRAY X-MP/216 computer system with SSD solid-state storage device valued at approximately \$15 million. The purchased system will be installed in the first quarter of 1988 at the Agency of Industrial Science and Technology in Tsukuba, Japan.

Although this is the ninth Cray computer installed in Japan, it is

the first installation at a government site. The CRAY X-MP/216 will be used for scientific research and education.

Texaco installs supercomputer

Cray Research announced the Texaco, Inc. CRAY X-MP/28 installation on November 5. The leased system, valued at approximately \$11.7 million, was installed this quarter at Texaco's geophysical center in Bellaire, Texas.

This is the first Cray supercomputer for Texaco. The company plans to use the system for general petroleum research, including seismic analysis and reservoir modeling.

1988 merit increases

Each fall, a team of human resources representatives from around the company looks at Cray's U.S. salary program. The team researches the salary programs of other U.S. companies, evaluates how Cray's salaries compare with those of other companies, and decides what Cray Research must do to keep its salaries competitive within the U.S. market. Based on this information, a recommendation is made for the coming year for the U.S. merit increase program. Cray's international subsidiaries use their local markets and economic conditions to determine their individual salary programs.

Merit increases are salary changes that reflect performance on current jobs. They are different from promotional increases, which are changes based on moving into new jobs with more responsibility. Merit increases also differ from adjustment increases, which bring someone up to a newly established minimum for a salary range.

Over the past few years, the compensation team has found total merit increase percentages steadily declining for companies within the computer industry. In 1986 and 1987, companies within the industry granted merit increases at the rate of approximately 6.0 and 5.0 percent, respectively. Cray Research's merit increase targets during those two years were higher at 8.0 and 6.0 percent. However, for 1988, other computer companies are saying their merit increase percentage will go up slightly, to between 5.5 and 6.0 percent, while our company's 1988 merit increases are targeted at 5.0 percent.

"Many of the companies that we compare ourselves to have experienced salary freezes, cutbacks, and downsizing in the past few years. To a certain extent, these companies are playing catch-up," explains Karen Clary, human resources manager. "On the other hand, Cray Research is anticipating a very challenging year in 1988, as we move through a major product transition."

"This does not mean that all people will receive increases equal to the

overall target," emphasizes Karen. "At Cray Research, a person's actual merit increase is based on circumstances that include individual performance, the individual's salary in relation to the job's salary range, and department and division budgets. Even with 5.0 percent as guidance, it is up to individual managers and divisions to use discretion in allocating funds."

"It may mean that people who demonstrate outstanding performance, and whose current salary is low in their salary range, will receive an increase greater than 5.0 percent," Karen continues. "At the same time, people who are meeting standards, and whose salary is quite high in their salary range, might receive a merit increase lower than 5.0 percent. Finally, someone who is performing below standard, will more than likely receive little, if any increase. This is a decision that is made by division management. Employees are encouraged to talk with their managers about actual job performance and individual salary increases."

What type are you?

Female **ENTP** seeking male **ISFJ**. Have you hugged your **INTJ** today? **ESFP** spoken here.

More acronymic English? The next generation of supercomputer? A new line of software products? No, these four-letter composites designate specific personality traits associated with the Myers-Briggs Type Indicator (MBTI), a study that helps define individual predispositions. These personality indicators are seen everywhere from license plates to the personal columns and are discussed everywhere from cocktail parties to the *Working with Diversity* seminar offered through Cray Research.

The MBTI's objective

Perception is defined as the process of becoming aware — of perceiving. Often in a business

setting, people of similar psychological make-up work well together because they have a common way of perceiving the world and making decisions. And at the same time, people of dissimilar psychological make-up work well together because their perceptions complement one another.

The MBTI acts as a tool for self awareness. As such, it also helps people recognize that different perceptions do exist — and that these differences make a valuable contribution to a team environment.

For many years, interest in the MBTI existed primarily in the fields of sociology and psychology. That has changed as MBTI applications have gained increased acceptance and popularity in the business world. Of the estimated 1.5 million people who participated in the

MBTI in 1986, over 40 percent of the tests taken were for use in a corporate setting.

"At Cray Research, the MBTI is used to help people recognize the diversity of the people who work here and to show how those differences can be used effectively in a team setting," says Mary McDiarmid, employee development specialist.

"The test is so popular in this company that it's often the topic of casual conversation in the hallways — I'm an ESTP, what are you?"

As stated earlier, the *Working with Diversity* seminar offered through human resources uses the MBTI as the focal point of its program — as does the *Communication Skills for Managers* course. In addition, many people at Cray Research take the MBTI through task force groups. Used in this approach, the indicator becomes a way of introducing a number of



different individuals with diverse backgrounds and careers to each other. For example, earlier this year, members of the Support Staff Seminar task force took the MBTI before their first meeting. "Many of us had never met before, but knowing everyone's MBTI types gave us some basic information about each individual," recalls Clark Travis, task force member. "And by recognizing that each 'type' has different qualities, we were able to balance out the overall strengths and weaknesses of our group. In the case of this task force, we had many people who were quick at coming up with new and creative ideas, but we had very few people who were adept at applying those concepts in a practical sense. By recognizing those individuals whose strengths were in application, we really were able to come up with and implement some great ideas for the Support Staff Seminar."

Origin of the MBTI

The MBTI was developed by Catherine Briggs and her daughter, Isabel Myers-Briggs. The origins of the indicator, however, date back to Swiss psychologist Carl Jung. Jung divided personalities into sixteen categories, or types. Using that formula, the MBTI asks a series of over 100 questions that indicate within which of those sixteen types a person could be categorized. The questions asked indicate how a person might look at things, go about making decisions, or act in a given situation. Examples include: "Would you rather have a boss who is kind or fair?" or "Do you work first and play later, or do you play first and work later?" The same type of question is asked in a number of different ways so that a fair conclusion can be drawn from the results.

The type indicators

Based on answers given on the test, people are assigned four letters, which reflect their preferences and

place them into one of Jung's sixteen personality types. Someone can be either extroverted (E) or introverted (I), sensing (S) or intuitive (N), thinking (T) or feeling (F), and either judging (J) or perceiving (P).

Extroverts tend to be attracted to groups — they are energized by being with others and express emotion freely. On the other hand, introverts tend to like being alone or in small groups; they appear reserved and for the most part, get their energy by going inward or by being alone.

Sensing types prefer to pay attention to detail while intuitives prefer to look at the big picture. In other words, sensing people see the trees and intuitive people see the forest.

Thinkers prefer to make decisions based on cold, hard facts. They look at life and situations in the long-term and are interested in how their decisions relate to the outside world. Feelers, on the other hand, tend to let the heart rule the head. They are concerned with the short term and are more interested in how decisions affect present situations.

Finally, the judging/perceiving type indicates how people take in and use information. A judging person is organized, decisive, and very strict about meeting deadlines. And someone who is categorized as perceiving tends to be more flexible and allows time to explore. Often, a perceiving person will let things go until the last minute if there are more interesting or exciting things to do.

Again, the MBTI only indicates predispositions for people to act in certain ways. "Leaning towards the other category is like writing with your opposite hand," explains Mary McDiaramid. "You can still do it, but it is more difficult, and it makes you feel uncomfortable. An introvert will attend a party, but will probably single out a few key individuals. A sensing CEO will pay attention to how the company relates to the global economy, but will be more interested in the company's own profits, return on equity, and net assets."

There are no right or wrong answers to the MBTI, and it does nothing to

measure intelligence, motivation, maturity, creativity, or mental health. It is merely a tool used to increase awareness of how individuals may perceive the world.

The advantages of diversity

By participating in the Myers-Briggs Type Indicator, more people at Cray Research are discovering what the Cray Style has recognized all along — that individual differences do make a difference. Understanding and using these differences effectively is what creates a stronger, more productive team environment. Two people on the same team with different Myers-Briggs types have the potential to complement each other and bring another dimension of strength to the group. In work situations, for example, extroverts like variety and action. Introverts are interested in the facts and ideas behind their work, and they prefer a quiet setting for concentration. Thinking types are more analytically oriented and feeling types are more people oriented. Sensing types work steadily and realistically, and intuitives balance that with bursts of energy powered by enthusiasm and inspiration. And while judging types work best when they can develop and follow a plan, perceptive types leave themselves open and adapt well to changing situations. What it comes down to is that each member of a team makes a unique and valuable contribution to the group as a whole. And understanding the different personality types in a group can help all members work better together.

Reaffirming the Style

By using the Myers-Briggs Type Indicator in their work environments, many people are reaffirming the Cray Style's claim that the "creativity that emerges from the company comes from the many ideas of the individuals who are here."

At Cray Research, the individual remains the key. ●



In the spirit of giving

*"Give a little love to a child, and
you get a great deal back."*

John Ruskin
(1819-1900)



The holiday season is a time of giving around the world. At Cray Research, people throughout the company are participating in holiday giving programs that support less fortunate families with food, gift, and monetary donations.

Through programs like Adopt-a-Family, people at Cray Research provide support in the form of holiday gifts — gifts for families who otherwise might not receive any.

Check with your local human resources representative or contact Joanne Whiterabbit in Minneapolis to find out about the giving programs available at your location. With your participation, another family will remember the joy of this holiday season.



1099 forms for 1987 tax returns

To all employees who are participating in the 1987-88 **Stock Purchase Investment Plan (SPIP)** or who participated in the 1986-87 plan year: don't forget that Norwest Bank of Minneapolis will be sending you a 1099 form reporting interest earned on the money in that account. This statement must be used in preparing your 1987 tax return. Please note that 1099 forms will not be issued for interest amounts less than \$10.00.

HCEA and DCEA forfeitures

Now is the time to look at the balance on your **Health Care Expense Account (HCEA) and Dependent Care Expense Account (DCEA)**. The HCEA can be used for out-of-pocket costs that your health care provider did not pick up — such as non-prescription drugs, dental expenses, eye glasses, or contacts. The DCEA is used by eligible employees to pay for dependent care expenses.

In both accounts, expenses can be submitted through March of 1988,

but must be *incurred* in 1987 to be reimbursed. If you aren't sure whether you have money left in either account, consult your local human resources representative or check your third-quarter Prudential statement. Keep in mind that this statement does not show the fourth-quarter employee or company contributions. Remember: use it or lose it!

Q&A on employee benefits

Q: I recently got married and would like to know how to change the beneficiary designation on my 401(k) account. How do I do this?

A: Contact your local human resources representative who will provide you with the appropriate form for changing your beneficiary.

Keep in mind that you have separate beneficiary forms for life insurance (including travel accident insurance), as well as the deferred profit sharing and investment savings plan. It is important to review your beneficiary designation periodically, perhaps every year or two, to determine if it is still appropriate.

Q: I have been working at Cray Research full time for the last two years and did not enroll in the 401(k) Plan when I was first eligible. Now, I have decided that I would like to enter the plan. When can I do this?

A: If you have met the initial eligibility requirements (worked

500 hours in a six-month period) you can enroll by completing a form and sending it to your local human resources representative at least 30 days prior to the beginning of the quarter in which you want to enroll.

Q: During open enrollment, I signed up to have deductions taken from my paycheck for the Health Care Expense Account. When will the first deduction show up on my paycheck stub?

A: The check you receive the week of December 28 will have 1988 deductions taken from it.

Q: How are salary increases reflected in the amount of my basic life insurance?

A: Once every six months, in February and August, life insurance amounts are updated to include any salary changes that occurred in the prior six months. For salespeople, this would also include commissions.

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